

Duquesne University

## Duquesne Scholarship Collection

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Outreach Materials

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### Concussion Activity

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# Concussion Activity



Women in STEM at  
Duquesne University

## **Part 1: Concussion Sensor**

The purpose of the first activity is to explore the effects of an impact to your head and how safety equipment, like helmets, can protect you. This will be demonstrated by using a sensor in a mannequin head and measuring velocity of impact.

### **Part 1 Supplies:**

- Mannequin Head with swim cap
- Pocketlab™ Sensor and tablet to measure velocity
- Book or heavy object to drop
- Bicycle and hockey helmet

### **Part 1 Steps:**

1. Turn the sensor on and place the sensor into the pre-cut hole in the mannequin head and place swim cap on to prevent sensor from falling out  
Note: It should already be synced to the tablet being used (confirm this ahead of time) and the app should be opened.
2. Drop the book on the mannequin head and observe the impact by measuring the velocity  
Note: The sensor measures X, Y, and Z planes which can be discussed depending on the age group
3. Place the bicycle helmet on the mannequin head and repeat step 2
4. Place the hockey helmet on the mannequin and repeat step 2

## **Part 2: Concussion Goggles Challenge**

The purpose of the second activity is to demonstrate the symptoms of a concussion using concussion goggles. Wearing the concussion goggles students will test their hand-eye coordination, visual perception, and balance. This will allow the students to more easily identify concussion symptoms in the future.

### **Part 2 Supplies:**

- Fatal Vision™ Goggle
- Tape for making a line
- Ring toss
- Ball and goalie net
- Grabber and pool toys
- Velcro balls and target

### **Part 2 Steps:**

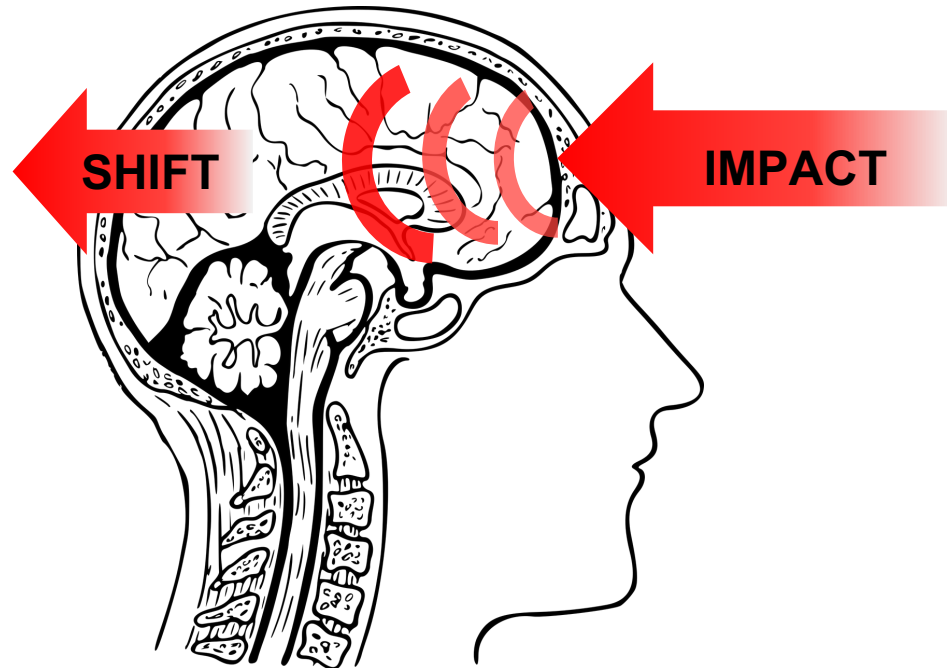
Wearing the concussion goggles the following activities will be performed. If time allows the activities can be first done without the goggles and then with them to demonstrate the delay and mental and sensory function.

1. Pick up and exchange
  - A square will be on each side of participant
    - Left side will have 2 diving sticks
    - Right side will have 2 diving fish
  - Participants will move 2 sticks from left to right and 2 fish from right to left using a claw pole
  - They must successfully move all 4 to move on
2. Walk-A-line
  - A line will be made with tape and the participant must walk foot-over-foot without stepping off the tape
  - After three failed attempts the participant will move on
3. Ring Toss
  - Participant will throw rings at a cone
  - No repeats on tosses
4. Ball Kick
  - Participants will kick 3 balls into a hockey net
5. Target Board
  - Participants will throw 3 Velcro balls at a target

This document was created by Michelle Valkanas

## What is a concussion?

A concussion is caused by a blow, jolt, or heavy impact to the head. This impact causes the brain to shift, colliding with the skull. When this happens bruising or swelling can occur, this causes your brain to function differently. Severe swelling can even cut off blood flow to parts of the brain, causing extensive and sometimes permanent damage. A concussion cannot be seen, but there are common symptoms associated with concussions. Symptoms include difficulty thinking or remembering, headache, nausea or vomiting, dizziness, double vision, sensitivity to light or noise, and irritable or more emotional than usual. These symptoms can show up immediately, within a few hours, or sometimes not for a couple of days. You can get a concussion without losing consciousness. Recovery can take a while and it is important to make sure that you get the rest that you need. Avoid physical activity until all your concussion symptoms are gone. The CDC recommends that you remember the A,B,C's of concussions: **A**ssess the situation, **B**e alert for symptoms, and **C**ontact a health care professional.



Concussion sensor is from <https://www.thepocketlab.com/store/pocketlab-one> and the concussion goggles is from <https://www.fatalvision.com/product-category/concussion/fatal-vision-concussion-goggles/>. The information provided here and for more information on concussions visit: <https://concussionfoundation.org/concussion-resources> or <https://www.cdc.gov/headsup/index.html>. For more information on the interactive educational app (available on ios and android devices) "REBOUND: Beating Concussions" visit: <https://www.thepartnershipineducation.com/resources/bibliotech-tm-rebound-beating-concussions>.